Notice of Allowability	Application No.	Applicant(s)	
	09/980,381	ZOGHBI ET AL.	
	Examiner	Art Unit	
	Michael C. Wilson	1632	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *7-11-05*.

2. ☒ The allowed claim(s) is/are *48,59 and 60*.

3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☒ All b) ☐ Some* c) ☐ None of the:
      1. ☒ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 7-11-05
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date *9-30-05* .
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

MICHAEL WILSON
PRIMARY EXAMINER

REASONS FOR ALLOWANCE

The following is an examiner's statement of reasons for allowance:

Claims 1-47 and 49-58 have been cancelled.

The species election of an atonal protein was withdrawn in the office action sent 4-2-04.

Priority

Provisional application 60/176993 (1-19-00) suggested fusion proteins comprising an atonal-associated amino acid sequence operably linked to a nucleic acid sequence encoding a receptor-binding domain of a bacterial toxin (claim 103) or a nucleic acid sequence encoding a protein transduction domain (claim 104). Provisional application '993 does not support the aspect of Hath1 protein as claimed. Claims 48, 55 and 57-60 have support as they relate to Math1 fusion proteins as currently claimed to '993 (1-19-00).

Claim 50 in provisional application 60/137,060 (6-1-99) claims a "composition comprising a Math1 protein or gene in combination with a delivery vehicle". Claim 60 claims "the composition of claim 50, wherein Math1 and the receptor-binding domain of a bacterial toxin comprises a fusion protein." It is not readily apparent that the "fusion protein" in claim 60 comprises Math1 because "the receptor-binding domain of a bacterial toxin" in claim 60 lacks antecedent basis and because the bacterial toxin may as a delivery vehicle using covalent bonds and not by protein expression from a hybrid

gene comprising the bacterial toxin and Math1. As written, it cannot be determined that claim 60 encompasses a hybrid gene encoding a bacterial toxin and Math1. Provisional application '060 does not support the Hath1 protein claimed or the concept of a fusion protein comprising a protein transduction domain as claimed. Claims 48, 55 and 57-60 as currently claimed do not have priority to '060.

Acknowledgment is made of applicant's claim for foreign priority based on an application filed in PCT/US00/15410 on 6-1-00. The certified copy was filed 3-6-02.

Claims 48, 59 and 60 have support as they relate to a nucleic acid sequence encoding a fusion protein comprising i) Math1 and ii) a bacterial toxin or a protein transduction domain as currently claimed to '993 (1-19-00).

Claims 48, 59 and 60 have support as currently claimed (a nucleic acid sequence encoding a fusion protein comprising i) Math1 or Hath1 and ii) a bacterial toxin or a protein transduction domain) to PCT/US00/15410 (6-1-00) (see claims 44 and 45 taken with pg 23, lines 15-18).

The effective filing date of Math1 embodiments as claimed is 1-19-00.

The effective filing date of Hath1 embodiments as claimed is 6-1-00.

Claim Rejections - 35 USC § 112

Written Description

The rejection of claims 55, 57 and 58 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement has been withdrawn because the claims have been canceled.

Enablement

The rejection of claims 55, 57 and 58 under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a nucleic acid sequence encoding a fusion protein, said fusion protein comprising a Math1 protein that is at least about 80% identical to SEQ ID NO: 58 operably linked to a bacterial toxin or to a protein transduction domain, does not reasonably provide enablement for a nucleic acid sequence encoding any atonal-associated protein that is at least about 80% identical to SEQ ID NO:58 as broadly claimed, or that is at least about 80% identical to both SEQ ID NO:58 and SEQ ID NO:70 operably linked to a protein transduction domain of HIV tat protein has been withdrawn because the claims have been canceled.

Claim Rejections - 35 USC § 103

The rejection of claims 48 and 60 under 35 U.S.C. 103(a) as being unpatentable over Akazawa (J. Biol. Chem., 1995, Vol. 270, No. 15, pg 8730-8738) in view of Schwarze (Science, Sept. 1999, Vol. 285, pg 1569-1572) has been withdrawn in view of applicants' arguments (in part). Akazawa taught transfecting eukaryotic cells *in vitro* with a vector encoding mouse atonal protein 1 (math1) (pg 8734, col. 2). Math1 is 87.4% identical to SEQ ID NO: 58. Amino acids 160-180 of the math1 taught by Akazawa are 100% identical to SEQ ID NO: 70. Akazawa did not teach the vector encoded a fusion protein comprising math1. While Schwarze taught making a fusion protein for use *in vivo* made using a nucleic acid sequence encoding β-gal operably linked to an HIV tat protein transduction domain (¶ bridging pg 1569-1570), one of

ordinary skill in the art would not have looked to the *in vivo* protein delivery art of Schwarze to improve the method of transfecting cells described by Akazawa. Hindsight reasoning would be required to improve the transfection cells with a plasmid encoding Math1 taught by Akazawa by making a fusion protein comprising the TAT protein as described by Schwarze.

The rejection of claims 48 and 60 under 35 U.S.C. 103(a) as being unpatentable over Ben-Arie (Hum. Mol. Genet. 1996, Vol. 5, pg 1207-1216) in view of Schwarze (Science, Sept. 1999, Vol. 285, pg 1569-1572) has been withdrawn in view of applicants arguments (in part). Ben-Arie taught transfecting eukaryotic cells with a vector encoding Hath1 (pg 1208, col. 1, lines 9-12, the sentence bridging col. 1-2, and col. 2, lines 1-2; pg 1213, ¶ bridging col. 1-2; pg 1215, col. 1, Physical Mapping of HATH1). Ben-Arie did not teach the vector encoded a fusion protein comprising Hath1. While Schwarze taught making a fusion protein for use *in vivo* made using a nucleic acid sequence encoding β-gal operably linked to an HIV tat protein transduction domain (¶ bridging pg 1569-1570), one of ordinary skill in the art would not have looked to the *in vivo* protein delivery art of Schwarze to improve the method of transfecting cells described by Ben-Arie. Hindsight reasoning would be required to improve the transfection cells with a plasmid encoding Hath1 taught by Ben-Arie by making a fusion protein comprising the TAT protein as described by Schwarze.

Double Patenting

The rejection of claims 48 and 60 under the judicially created doctrine of double patenting over claim 12 (dependent upon claim 9) of U. S. Patent No. 6,838,444 has been withdrawn in view of the terminal disclaimer filed 9-30-05. Applicants' arguments filed on 7-11-05 stated the terminal disclaimer was filed "herewith;" however, no terminal disclaimer was found. The examiner called applicants' representative, Melissa Sistrunk, on 9-30-05, and the terminal disclaimer was faxed to the examiner.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Inquiry concerning this communication or earlier communications from the examiner should be directed to Michael C. Wilson who can normally be reached at the office on Monday, Tuesday, Thursday and Friday from 9:30 am to 6:00 pm at 571-272-0738.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547.

Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history information. It also enables applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public.

For all other customer support, please call the USPTO Call Center (UCC) at 800-786-9199.

If attempts to reach the examiner are unsuccessful, the examiner's supervisor, Ram Shukla, can be reached on 571-272-0735.

The official fax number for this Group is (571) 273-8300.

Michael C. Wilson

MICHAEL WILSON
PRIMARY EXAMINER